

SEQUENCE LISTING

<110> E. I. du Pont de Nemours and Company
<110> Butler, Karla
 Falco, Carl
 Famodu, Omolayo O.
 Fang, Yiwen
 Han, Feng
 Heppard, Elmer
 Liu, Zhan-Bin
 Miao, Gou-Hau
 Odell, Joan
 Rafalski, Antoni

<120> Disease Resistance Factors

<130> BB1252 US NA1

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<150> 60/107,242
<151> 1998-11-05

<150> US99/25,953
<151> 1999-10-04

<120> Disease Resistance Factors

<160> 17

<170> Microsoft Office 97

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<213> Zea mays

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 gagatggtgt ccccgacat ggtgtccgtg ctctcgAAC aacanncga ncccagngcc 420
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 <212> PRT
 <213> Zea mays

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Lys Leu Met Val Met Gly Glu Gly Leu Asp Leu Asp Ala Ala Leu Ala
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Val His Tyr Ala Val Gln His Cys Gly Arg Asp Val Val Lys Ala Leu
 35 40 45

Leu Glu Leu Gly Ala Ala Asp Val Asn Ser Arg
 50 55

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 <212> DNA
 <213> Oryza sativa

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gctgttccag cgacgcgtt ttaacttcgt cgataagact ctagtagaaag atgttcttcc 240
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tggtcagata aaagagattc gccaaaaatc tcagccaaat gagggtgaca ccgtcatttc 420
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tgagcttntt aagttgcgtt taaaagaant tggatnc 518

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<213> Oryza sativa

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Asp Ser Cys Pro Pro Ala Ile Arg Phe Asn Val Glu Gln Met Tyr Ala
35 40 45

Ala Trp Ala Phe Lys Ile Thr Glu Leu Ile Ser Leu Phe Gln Arg Arg
50 55 60

Leu Leu Asn Phe Val Asp Lys Thr Leu Val Glu Asp Val Leu Pro Ile
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Leu Gln Val Ala

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<212> DNA
<213> Triticum aestivum

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<212> PRT

<213> *Triticum aestivum*

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<221> UNSURE

<222> (9)

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Arg Glu Met Met Arg Asn Pro Met Thr Ala Glu Asp Ser Val Thr Ser
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Arg Val Ala Phe Ala Arg Leu Phe Phe Pro Pro Ala Glu
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<211> 1227

<212> DNA

<213> Zea mays

<400> 7

<210> 8

<211> 325

<212> PRT

<213> Zea mays

<400> 8

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Asp Asp Val Glu Leu Val Lys Leu Leu Leu Asn Glu Ser Asp Ile Thr
20 25 30

Leu Asp Asp Ala Asn Ala Leu His Tyr Ala Ala Ser Tyr Cys Asp Pro
 35 40 45

 Lys Val Val Ser Glu Leu Leu Asp Leu Ala Met Ala Asn Leu Asn Leu
 50 55 60

 Lys Asn Ser Arg Gly Tyr Thr Ala Leu His Leu Ala Ala Met Arg Arg
 65 70 75 80

 Glu Pro Ala Ile Ile Met Cys Leu Leu Asn Lys Gly Ala Asn Val Ser
 85 90 95

 Gln Leu Thr Ala Asp Gly Arg Ser Ala Ile Gly Ile Cys Arg Arg Leu
 100 105 110

 Thr Arg Ala Lys Asp Tyr Asn Thr Lys Met Glu Gln Gly Gln Glu Ser
 115 120 125

 Asn Lys Asp Arg Leu Cys Ile Asp Ile Leu Glu Arg Glu Met Met Arg
 130 135 140

 Asn Pro Met Ala Val Glu Asp Ala Val Thr Ser Pro Leu Leu Ala Asp
 145 150 155 160

 Asp Leu His Met Lys Leu Leu Tyr Leu Glu Asn Arg Val Ala Phe Ala
 165 170 175

 Arg Leu Phe Phe Pro Ala Glu Ala Lys Val Ala Met Gln Ile Ala Gln
 180 185 190

 Ala Asp Thr Thr Glu Glu Phe Gly Gly Ile Val Ala Val Ala Ala Ser
 195 200 205

 Thr Ser Gly Lys Leu Arg Glu Val Asp Leu Asn Glu Thr Pro Val Thr
 210 215 220

 Gln Asn Lys Arg Leu Arg Ser Arg Val Asp Ala Leu Met Lys Thr Val
 225 230 235 240

 Glu Leu Gly Arg Arg Tyr Phe Pro Asn Cys Ser Gln Val Leu Asp Lys
 245 250 255

 Phe Leu Glu Asp Asp Leu Pro Glu Gly Leu Asp Gln Phe Tyr Leu Gln
 260 265 270

 Arg Gly Thr Ala Asp Glu Gln Lys Val Lys Arg Met Arg Phe Cys Glu
 275 280 285

 Leu Lys Glu Asp Val Leu Lys Ala Phe Ser Lys Asp Lys Ala Glu Gly
 290 295 300

 Ser Val Phe Ser Gly Leu Ser Ser Ser Ser Cys Ser Pro Pro Gln
 305 310 315 320

 Lys Tyr Ala Gln Arg
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<212> DNA
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<211> 582
<212> PRT
<213> Oryza sativa

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Ser Ala Ser Val Glu Glu Gly Gly Ala Asp Ala Asp Ala Asp Val Glu
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Ala Leu Arg Arg Leu Ser Asp Asn Leu Ala Ala Ala Phe Arg Ser Pro
35 40 45

Glu Asp Phe Ala Phe Leu Ala Asp Ala Arg Ile Ala Val Pro Gly Gly
50 55 60

Gly Gly Gly Gly Asp Leu Leu Val His Arg Cys Val Leu Ser Ala
 65 70 75 80
 Arg Ser Pro Phe Leu Arg Gly Val Phe Ala Arg Arg Ala Ala Ala
 85 90 95
 Ala Gly Gly Gly Glu Asp Gly Gly Glu Arg Leu Glu Leu Arg Glu
 100 105 110
 Leu Leu Gly Gly Gly Glu Glu Val Glu Val Gly Tyr Glu Ala Leu
 115 120 125
 Arg Leu Val Leu Asp Tyr Leu Tyr Ser Gly Arg Val Gly Asp Leu Pro
 130 135 140
 Lys Ala Ala Cys Leu Cys Val Asp Glu Asp Cys Ala His Val Gly Cys
 145 150 155 160
 His Pro Ala Val Ala Phe Met Ala Gln Val Leu Phe Ala Ala Ser Thr
 165 170 175
 Phe Gln Val Ala Glu Leu Thr Asn Leu Phe Gln Arg Arg Leu Leu Asp
 180 185 190
 Val Leu Asp Lys Val Glu Val Asp Asn Leu Leu Leu Ile Leu Ser Val
 195 200 205
 Ala Asn Leu Cys Asn Lys Ser Cys Met Lys Leu Leu Glu Arg Cys Leu
 210 215 220
 Asp Met Val Val Arg Ser Asn Leu Asp Met Ile Thr Leu Glu Lys Ser
 225 230 235 240
 Leu Pro Pro Asp Val Ile Lys Gln Ile Ile Asp Ala Arg Leu Ser Leu
 245 250 255
 Gly Leu Ile Ser Pro Glu Asn Lys Gly Phe Pro Asn Lys His Val Arg
 260 265 270
 Arg Ile His Arg Ala Leu Asp Ser Asp Asp Val Glu Leu Val Arg Met
 275 280 285
 Leu Leu Thr Glu Gly Gln Thr Asn Leu Asp Asp Ala Phe Ala Leu His
 290 295 300
 Tyr Ala Val Glu His Cys Asp Ser Lys Ile Thr Thr Glu Leu Leu Asp
 305 310 315 320
 Leu Ala Leu Ala Asp Val Asn His Arg Asn Pro Arg Gly Tyr Thr Val
 325 330 335
 Leu His Ile Ala Ala Arg Arg Glu Pro Lys Ile Ile Val Ser Leu
 340 345 350
 Leu Thr Lys Gly Ala Arg Pro Ala Asp Val Thr Phe Asp Gly Arg Lys
 355 360 365
 Ala Val Gln Ile Ser Lys Arg Leu Thr Lys Gln Gly Asp Tyr Phe Gly
 370 375 380

Val Thr Glu Glu Gly Lys Pro Ser Pro Lys Asp Arg Leu Cys Ile Glu
385 390 395 400

Ile Leu Glu Gln Ala Glu Arg Arg Asp Pro Gln Leu Gly Glu Ala Ser
405 410 415

Val Ser Leu Ala Met Ala Gly Glu Ser Leu Arg Gly Arg Leu Leu Tyr
420 425 430

Leu Glu Asn Arg Val Ala Leu Ala Arg Ile Met Phe Pro Met Glu Ala
435 440 445

Arg Val Ala Met Asp Ile Ala Gln Val Asp Gly Thr Leu Glu Phe Asn
450 455 460

Leu Gly Ser Gly Ala Asn Pro Pro Pro Glu Arg Gln Arg Thr Thr Val
465 470 475 480

Asp Leu Asn Glu Ser Pro Phe Ile Met Lys Glu Glu His Leu Ala Arg
485 490 495

Met Thr Ala Leu Ser Lys Thr Val Glu Leu Gly Lys Arg Phe Phe Pro
500 505 510

Arg Cys Ser Asn Val Leu Asp Lys Ile Met Asp Asp Glu Thr Asp Pro
515 520 525

Val Ser Leu Gly Arg Asp Thr Ser Ala Glu Lys Arg Lys Arg Phe His
530 535 540

Asp Leu Gln Asp Val Leu Gln Lys Ala Phe His Glu Asp Lys Glu Glu
545 550 555 560

Asn Asp Arg Ser Gly Leu Ser Ser Ser Ser Ser Thr Ser Ile Gly
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Ala Ile Arg Pro Arg Arg
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<212> DNA
<213> Oryza sativa

<220>
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<222> (65)

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aaccctggcg	ttacccaact	taatcgccctt	gcagcacatc	cccccttc当地	cagctggc当地	2040
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<210> 12

<211> 455

<212> PRT

<213> Oryza sativa

<400> 12

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Asp	Ser	Cys	Pro	Pro	Ala	Ile	Arg	Phe	Asn	Val	Glu	Gln	Met	Tyr	Ala
					35				40				45		

Ala	Trp	Ala	Phe	Lys	Ile	Thr	Glu	Leu	Ile	Ser	Leu	Phe	Gln	Arg	Arg
					50				55				60		

Leu	Leu	Asn	Phe	Val	Asp	Lys	Thr	Leu	Val	Glu	Asp	Val	Leu	Pro	Ile
					65				70				75		80

Leu	Gln	Val	Ala	Phe	His	Ser	Glu	Leu	Thr	Pro	Val	Leu	Glu	Lys	Cys
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Ile	Arg	Arg	Ile	Ala	Arg	Ser	Asn	Leu	Asp	Asn	Val	Ser	Leu	Asp	Lys
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Glu	Leu	Pro	Pro	Glu	Val	Ala	Val	Gln	Ile	Lys	Glu	Ile	Arg	Gln	Lys
					115				120				125		

Ser	Gln	Pro	Asn	Glu	Gly	Asp	Thr	Val	Ile	Ser	Asp	Pro	Val	His	Glu
					130				135				140		

Lys	Arg	Val	Arg	Arg	Ile	His	Arg	Ala	Leu	Asp	Ser	Asp	Asp	Val	Glu
					145				150				155		160

Leu Val Lys Leu Leu Asn Glu Ser Glu Ile Thr Leu Asp Asp Ala
 165 170 175
 Asn Ala Leu His Tyr Ala Ala Ala Tyr Cys Asp Ser Lys Val Val Ser
 180 185 190
 Glu Leu Leu Asp Leu Arg Leu Ala Asn Leu Asn Leu Lys Asn Ser Arg
 195 200 205
 Gly Tyr Thr Ala Leu His Leu Ala Ala Met Arg Arg Glu Pro Ala Ile
 210 215 220
 Ile Met Cys Leu Leu Asn Lys Gly Ala Ala Val Ser Gln Leu Thr Ala
 225 230 235 240
 Asp Gly Gln Ser Ala Met Ser Ile Cys Arg Arg Leu Thr Arg Met Lys
 245 250 255
 Asp Tyr Asn Thr Lys Met Glu Gln Gly Gln Glu Ser Asn Lys Asp Arg
 260 265 270
 Leu Cys Ile Asp Ile Leu Asp Arg Glu Met Ile Arg Lys Pro Met Ala
 275 280 285
 Val Glu Asp Ser Val Thr Ser Pro Leu Leu Ala Asp Asp Leu His Met
 290 295 300
 Lys Leu Leu Tyr Leu Glu Asn Arg Val Ala Phe Ala Arg Leu Phe Phe
 305 310 315 320
 Pro Ala Glu Ala Lys Val Ala Met Gln Ile Ala Gln Ala Asp Thr Thr
 325 330 335
 Pro Glu Phe Gly Ile Val Pro Ala Ala Ser Thr Ser Gly Lys Leu Lys
 340 345 350
 Glu Val Asp Leu Asn Glu Thr Pro Val Thr Gln Asn Lys Arg Leu Arg
 355 360 365
 Ser Arg Val Asp Ala Leu Met Lys Thr Val Glu Leu Gly Arg Arg Tyr
 370 375 380
 Phe Pro Asn Cys Ser Gln Val Leu Asp Lys Phe Leu Glu Asp Asp Leu
 385 390 395 400
 Pro Asp Ser Pro Asp Ala Leu Asp Leu Gln Asn Gly Thr Ser Asp Glu
 405 410 415
 Gln Asn Val Lys Arg Met Arg Phe Cys Glu Leu Lys Glu Asp Val Arg
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 435 440 445
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<210> 13
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<212> DNA

<213> Triticum aestivum

<400> 13

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<210> 14

<211> 193

<212> PRT

<213> Triticum aestivum

<400> 14

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Glu Arg Glu Met Met Arg Asn Pro Met Thr Ala Glu Asp Ser Val Thr
20 25 30

Ser Pro Leu Leu Ala Asp Asp Leu His Met Lys Leu Ser Tyr Leu Glu
35 40 45

Asn Arg Val Ala Phe Ala Arg Leu Phe Phe Pro Ala Glu Ala Lys Val
50 55 60

Ala Met Gln Ile Ala Gln Ala Asp Val Thr Pro Glu Val Gly Gly Phe
65 70 75 80

Ser Ala Ala Ser Thr Ser Gly Lys Leu Arg Glu Val Asp Leu Asn Glu
85 90 95

Thr Pro Val Thr Lys Asn Lys Arg Leu Arg Ser Arg Val Asp Ala Leu
100 105 110

Ala Lys Thr Val Glu Leu Gly Arg Arg Tyr Phe Pro Asn Cys Ser Gln
115 120 125

Val Leu Asp Lys Phe Leu Glu Asp Gly Leu Pro Asp Gly Leu Asp Ala
130 135 140

Phe Gln Gln Gln Ser Gly Thr Pro Asp Glu Gln Gln Val Lys Lys Met
145 150 155 160

Arg	Phe	Cys	Glu	Val	Lys	Glu	Asp	Val	Arg	Lys	Ala	Tyr	Ser	Lys	Asp
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Ser

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<212> DNA
<213> Oryza sativa

<400> 15

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<211> 635
<212> PRT
<213> Oryza sativa

<400> 16
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Pro Cys Ser Val Ser Leu Ala Pro Pro Gly Ala Gly Ala Val Ala Ala
35 40 45

Gln Ala Ala Pro Val Ala Ala Gly Glu Gly Gly Gly Gly Gly Gly
50 55 60

Gly Gly Gly Gly Ser Ser Ser Val Glu Val Val Ser Leu Asn Arg
65 70 75 80

Leu Ser Ala Asn Leu Glu Arg Leu Leu Leu Asp Ser Asp Leu Asp Cys
85 90 95

Ser Asp Ala Asp Val Asp Val Ala Asp Gly Gly Pro Pro Val Pro Val
100 105 110

His Arg Cys Ile Leu Ala Ala Arg Ser Thr Phe Phe Tyr Asn Leu Phe
115 120 125

Ala Ala Arg Gly Arg Gly Asp Gly Ala Ala Gly Gly Gly Gly
130 135 140

Gly Gly Gly Gly Gly Glu Arg Thr Gly Gly Arg Pro Arg Tyr Lys
145 150 155 160

Met Glu Glu Leu Val Pro Gly Gly Arg Val Gly Arg Asp Ala Phe Leu
165 170 175

Ser Leu Leu Gly Tyr Leu Tyr Thr Gly Lys Leu Arg Pro Ala Pro Asp
180 185 190

Asp Val Val Ser Cys Ala Asp Pro Met Cys Pro His Asp Ser Cys Pro
195 200 205

Pro Ala Ile Arg Phe Asn Val Glu Gln Met Tyr Ala Ala Trp Ala Phe
210 215 220

Lys Ile Thr Glu Leu Ile Ser Leu Phe Gln Arg Arg Leu Leu Asn Phe
225 230 235 240

Val Asp Lys Thr Leu Val Glu Asp Val Leu Pro Ile Leu Gln Val Ala
245 250 255

Phe His Ser Glu Leu Thr Pro Val Leu Glu Lys Cys Ile Arg Arg Ile
260 265 270

Ala Arg Ser Asn Leu Asp Asn Val Ser Leu Asp Lys Glu Leu Pro Pro
275 280 285

Glu Val Ala Val Gln Ile Lys Glu Ile Arg Gln Lys Ser Gln Pro Asn
290 295 300

Glu Gly Asp Thr Val Ile Ser Asp Pro Val His Glu Lys Arg Val Arg
305 310 315 320

Arg Ile His Arg Ala Leu Asp Ser Asp Asp Val Glu Leu Val Lys Leu
325 330 335

Leu Leu Asn Glu Ser Glu Ile Thr Leu Asp Asp Ala Asn Ala Leu His
340 345 350

Tyr Ala Ala Ala Tyr Cys Asp Ser Lys Val Val Ser Glu Leu Leu Asp
355 360 365

Leu Arg Leu Ala Asn Leu Asn Leu Lys Asn Ser Arg Gly Tyr Thr Ala
370 375 380

Leu His Leu Ala Ala Met Arg Arg Glu Pro Ala Ile Ile Met Cys Leu
385 390 395 400

Leu Asn Lys Gly Ala Ala Val Ser Gln Leu Thr Ala Asp Gly Gln Ser
405 410 415

Ala Met Ser Ile Cys Arg Arg Leu Thr Arg Met Lys Asp Tyr Asn Thr
420 425 430

Lys Met Glu Gln Gly Gln Glu Ser Asn Lys Asp Arg Leu Cys Ile Asp
435 440 445

Ile Leu Asp Arg Glu Met Ile Arg Lys Pro Met Ala Val Glu Asp Ser
450 455 460

Val Thr Ser Pro Leu Leu Ala Asp Asp Leu His Met Lys Leu Leu Tyr
465 470 475 480

Leu Glu Asn Arg Val Ala Phe Ala Arg Leu Phe Phe Pro Ala Glu Ala
485 490 495

Lys Val Ala Met Gln Ile Ala Gln Ala Asp Thr Thr Pro Glu Phe Gly
500 505 510

Ile Val Pro Ala Ala Ser Thr Ser Gly Lys Leu Lys Glu Val Asp Leu
515 520 525

Asn Glu Thr Pro Val Thr Gln Asn Lys Arg Leu Arg Ser Arg Val Asp
530 535 540

Ala Leu Met Lys Thr Val Glu Leu Gly Arg Arg Tyr Phe Pro Asn Cys
545 550 555 560

Ser Gln Val Leu Asp Lys Phe Leu Glu Asp Asp Leu Pro Asp Ser Pro
565 570 575

Asp Ala Leu Asp Leu Gln Asn Gly Thr Ser Asp Glu Gln Asn Val Lys
580 585 590

Arg Met Arg Phe Cys Glu Leu Lys Glu Asp Val Arg Lys Ala Phe Ser
595 600 605

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610 615 620

Ser Ser Ser Pro Pro Lys Val Ala Lys Lys
625 630 635

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<211> 593
<212> PRT
<213> Arabidopsis thaliana

<400> 17
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Ala Ala Glu Gln Val Leu Thr Gly Pro Asp Val Ser Ala Leu Gln Leu
35 40 45

Leu Ser Asn Ser Phe Glu Ser Val Phe Asp Ser Pro Asp Asp Phe Tyr
50 55 60

Ser Asp Ala Lys Leu Val Leu Ser Asp Gly Arg Glu Val Ser Phe His
65 70 75 80

Arg Cys Val Leu Ser Ala Arg Ser Ser Phe Phe Lys Ser Ala Leu Ala
85 90 95

Ala Ala Lys Lys Glu Lys Asp Ser Asn Asn Thr Ala Ala Val Lys Leu
100 105 110

Glu Leu Lys Glu Ile Ala Lys Asp Tyr Glu Val Gly Phe Asp Ser Val
115 120 125

Val Thr Val Leu Ala Tyr Val Tyr Ser Ser Arg Val Arg Pro Pro Pro
130 135 140

Lys Gly Val Ser Glu Cys Ala Asp Glu Asn Cys Cys His Val Ala Cys
145 150 155 160

Arg Pro Ala Val Asp Phe Met Leu Glu Val Leu Tyr Leu Ala Phe Ile
165 170 175

Phe Lys Ile Pro Glu Leu Ile Thr Leu Tyr Gln Arg His Leu Leu Asp
180 185 190

Val Val Asp Lys Val Val Ile Glu Asp Thr Leu Val Ile Leu Lys Leu
195 200 205

Ala Asn Ile Cys Gly Lys Ala Cys Met Lys Leu Leu Asp Arg Cys Lys
210 215 220

Glu Ile Ile Val Lys Ser Asn Val Asp Met Val Ser Leu Glu Lys Ser
225 230 235 240

Leu Pro Glu Glu Leu Val Lys Glu Ile Ile Asp Arg Arg Lys Glu Leu
245 250 255

Gly Leu Glu Val Pro Lys Val Lys Lys His Val Ser Asn Val His Lys
260 265 270

Ala Leu Asp Ser Asp Asp Ile Glu Leu Val Lys Leu Leu Leu Lys Glu
275 280 285

Asp His Thr Asn Leu Asp Asp Ala Cys Ala Leu His Phe Ala Val Ala
290 295 300

Tyr Cys Asn Val Lys Thr Ala Thr Asp Leu Leu Lys Leu Asp Leu Ala
305 310 315 320

Asp Val Asn His Arg Asn Pro Arg Gly Tyr Thr Val Leu His Val Ala
325 330 335

Ala Met Arg Lys Glu Pro Gln Leu Ile Leu Ser Leu Leu Glu Lys Gly
340 345 350

Ala Ser Ala Ser Glu Ala Thr Leu Glu Gly Arg Thr Ala Leu Met Ile
355 360 365

Ala Lys Gln Ala Thr Met Ala Val Glu Cys Asn Asn Ile Pro Glu Gln
370 375 380

Cys Lys His Ser Leu Lys Gly Arg Leu Cys Val Glu Ile Leu Glu Gln
385 390 395 400

Glu Asp Lys Arg Glu Gln Ile Pro Arg Asp Val Pro Pro Ser Phe Ala
405 410 415

Val Ala Ala Asp Glu Leu Lys Met Thr Leu Leu Asp Leu Glu Asn Arg
420 425 430

Val Ala Leu Ala Gln Arg Leu Phe Pro Thr Glu Ala Gln Ala Ala Met
435 440 445

Glu Ile Ala Glu Met Lys Gly Thr Cys Glu Phe Ile Val Thr Ser Leu
450 455 460

Glu Pro Asp Arg Leu Thr Gly Thr Lys Arg Thr Ser Pro Gly Val Lys
465 470 475 480

Ile Ala Pro Phe Arg Ile Leu Glu Glu His Gln Ser Arg Leu Lys Ala
485 490 495

Leu Ser Lys Thr Val Glu Leu Gly Lys Arg Phe Phe Pro Arg Cys Ser
500 505 510

Ala Val Leu Asp Gln Ile Met Asn Cys Glu Asp Leu Thr Gln Leu Ala
515 520 525

Cys Gly Glu Asp Asp Thr Ala Glu Lys Arg Leu Gln Lys Lys Gln Arg
530 535 540

Tyr Met Glu Ile Gln Glu Thr Leu Lys Lys Ala Phe Ser Glu Asp Asn
545 550 555 560

Leu Glu Leu Gly Asn Ser Ser Leu Thr Asp Ser Thr Ser Ser Thr Ser
565 570 575

Lys Ser Thr Gly Gly Lys Arg Ser Asn Arg Lys Leu Ser His Arg Arg
580 585 590

Arg